MEETING SUMMARY

Job	**Summary of October 27, 2016 Meeting with EPA** **Discussion of Technical Memo 3: Exposure Scenarios for Human Health Risk Assessment for Operable Unit 3 – Process Areas, Yerington Mine Site, NV**
Client	**Atlantic Richfield Company (ARC)**
Date	**November 9, 2016**
To	**Jack Oman**
From	**Alma Feldpausch, Renee Sandvig**

Date November 9, 2016

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1. Meeting Introduction

Purpose: Teleconference to discuss exposure assessment approach supporting HHRA work plan development.

Read-aheads:

- Technical Memorandum 3 – Exposure Scenarios for HHRA for OU-3, dated August 4, 2016

Meeting Attendees

Chris Dirscherl	USEPA
Mike Bedan	CH2MHill
Jack Oman	Atlantic Richfield Company (ARC)
John Batchelder	Envirosolve Inc.
Alma Feldpausch	Ramboll Environ
Renee Sandvig	Ramboll Environ
Jamie Tull	Arcadis-US
Matt Arno	Foxfire Scientific
Dan Ferriter	Copper Environmental
Doc Richardson	Copper Environmental

2. Exposure Parameterization

ARC team proposed exposure parameters for each receptor relevant to OU-3 and will update the table to include references for all values.

EPA suggested modifying the trespasser and excavation worker exposure frequency (EF). ARC continues to support proposed RME EF's for the tresspasser (EF=7 d/yr). The proposed trespasser EF is consistent with Leviathan HHRA assumptions and is a reasonable upper bound value given site controls, remote location with respect to location of residential areas, and presence of active mining activites as deterrent to trespass. EPA noted a need to consult internally regarding

the basis for the alternate proposal of 50 d/yr before making a final recommendation. On November 9th, Chris Dirscherl followed-up via email stating that EPA considered ARC's proposed EF but continues to support an EF of 50 d/yr. The HHRA work plan will reflect EPA's recommendation for the trespasser RME EF.

EPA's proposal of 200 d/yr assumes one worker is allocated to a longer-term project. Though ARC continues to support the proposed excavation worker EF (65 d/yr) as a reasonable upper-bound estimate for duration of exclusive subsurface, intrusive work expected to support future site redevelopment, ARC will incorporate EPA's recommendation into the HHRA work plan as the RME value.

3. Calculation of Intake

ARC proposed evaluating indoor dust and outdoor soil as separate media, where indoor dust constituent of potential concern (COPC) concentrations are the product of the outdoor soil concentrations and the default mass soil-to-dust transfer factor (MSD) of 0.7 provided in the IEUBK model. ARC further proposed assuming that a resident's total daily soil ingestion is comprised of 55% indoor dust and 45% outdoor soil. The indoor worker is assumed to contact exclusively indoor dust and the trespasser and outdoor worker are assumed to contact exclusively outdoor soil. This approach is taken from lead assessment methods and the principles are considered applicable to all COPCs. EPA and CH2M Hill indicated that the approach seemed logical but will consult internally before approving this approach for non-lead COPCs. ARC suggested reaching out to EPA Region 8 toxicologist, Charlie Partridge, who approved this approach at the ACM Smelter and Refinery Site in Montana.

4. Calculation of EPCs

EPA indicated that the proposed depth-weighted approach for calculation of soil exposure point concentrations (EPCs) appeared reasonable and agreed with ARC's suggestion to include additional calculation of non-weighted EPCs in the HHRA as part of a sensitivity analysis.

Regarding EPCs for airborne dust, ARC will adopt the particulate emission factor (PEF) used in the Yerington Mine Site OU-8 HHRA for the construction/trench worker scenario. ARC also recommended use of the 2011 Baseline Inhalation HHRA results to address particulate inhalation exposures for other populations that are not expected to be subject to dust derived from movement of heavy vehicles, digging, etc. ARC will include summary of the inhalation HHRA in the OU-3 work plan and EPA will request the inhalation HHRA if not readily available from internal sources for their review.

5. Evaluation of Vapor Intrusion Pathway

EPA and ARC discussed vapor intrusion modeling, pariticularly draw-backs of using soil data to estimate vapor concentrations and EPA sampling and modeling guidance aimed at reducing uncertainty or at least erring on side of health protectiveness. Since buildings are not currently located where VOC concentrations are found, it is not possible to measure vapors directly; therefore modeling is required to determine potential future exposures from soil vapor intrusion.

Model assumptions, including parameters selected to represent VLT and justification for assuming slab-on-grade construction, will be discussed in the HHRA work plan. Modeling will be limited to subareas where VOCs are present at concentrations exceeding conservative screening levels calculated using EPA's Johnson & Ettinger model and where separation distance does not preclude this pathway. For the HHRA, vapor intrusion risk estimates will focus on indoor worker and residential scenarios. For the worker, smaller residence-sized building dimensions will be evaluated along with a more standard assumption of larger commercial building size.

EPA requested additional information on consideration of VOC mass to model indoor vapor concentrations. ARC will provide rationale and basis for assumptions in the HHRA work plan text and will forward to EPA a slide deck with additional information on the approach.

ARC will update/correct references in vapor intrusion input parameter tables, as suggested by EPA.

Regarding the trench/excavation dimension, ARC will provide rationale for assumptions in the work plan text.

6. Action Items & Next Steps

- ARC to provide EPA with presentation on consideration of VOC mass to model indoor vapor concentrations
- EPA to consult internally on approaches for:
  - Evaluating trespasser scenario at 7 day/yr, consistent with Leviathan Mine HHRA
  - Evaluating soil and indoor dust as separate media, borrowing from lead assessment guides
  - Incorporation of inhalation HHRA results to supplement OU-3 HHRA
  - Approach for considering vapor intrusion (indoor air) and vapors in a trench